

Claims

What is claimed is:

1. A process for the generation of a computer image of a coated, three-dimensional
5 object comprising the steps of, in appropriate order:
 - a) applying at least a relevant coating layer on at least two test panels under the
influence of a set of coating parameters which differs with respect to each panel,
 - (c) taking a plurality of measurements of at least one optical surface property as a
function of the set of coating parameters selected on application of the relevant
10 coating layer on each panel,
 - (c) storing the optical data in a datafile with assignment of the relevant set of coating
parameters,
 - (d) facetting the visible surface(s) of a three-dimensional object by computer into a
sufficient number of flat polygonal areas each being sufficiently small for the
15 sufficiently accurate description of the surface topography,
 - (e) assigning the relevant set of coating parameters and associated optical data in each
case to each individual polygonal area by computer, and
 - (f) assembling the polygonal areas into a computer image of the three-dimensional
20 object.
2. The process of claim 1, wherein the relevant coating layer is a single-layer top
coating consisting of the relevant coating layer.
3. The process of claim 1, wherein the relevant coating layer comprises one of the
25 coating layers in a multi-layer coating.
4. The process of claim 1, wherein the at least two test panels in step a) assume a
position selected from the group consisting of a horizontal orientation and a vertical
orientation.
- 30 5. The process of claim 1, wherein in step a) at least two test panels are coated in a
horizontal orientation and at least two additional test panels are coated in a vertical
orientation, wherein the sets of coating parameters used to coat the panels in the
horizontal orientation are the same as used to coat the panels in the vertical orientation,

and wherein the relevant optical data are stored with assignment of the relevant orientation prevailing whilst the test panels are being coated, and are selected accordingly when assigned to each individual polygonal area.

- 5 6. The process of claim 5, wherein at least two additional test panels are coated in an orientation arranged between the horizontal and the vertical orientation under the influence of the same sets of coating parameters used to coat the panels in the vertical and horizontal orientations, and the relevant optical data are stored with assignment of the relevant orientation prevailing whilst the additional test panels are being coated, and
10 are selected accordingly when assigned to each individual polygonal area.

7. The process of claim 1, wherein the measurements of optical surface properties are selected from the group consisting of non angle-dependent and angle-dependent measurements, non angle-dependent measurements being selected from the group
15 comprising visual determinations of pitting limits, visual determinations of sagging limits, colorimetric measurements on single-color coatings and measurements of the surface structure, angle-dependent measurements being selected from the group consisting of colorimetric measurements and gloss measurements.

- 20 8. The process of claim 7, wherein optical data measured as a function of angle are stored with assignment of the relevant angles selected from the group consisting of observation angles, illumination angles and combinations thereof, and are assigned to each individual polygonal area as a function of the position of an observer and at least one illumination source.

- 25 9. The process of claim 1, wherein the computer image is a representation selected from the group consisting of i) representation of an individual optical surface property and ii) representation of a combination of at least two optical surface properties.

- 30 10. The process of claim 1, wherein the computer image is a visually perceptible representation selected from the group consisting of
a) a realistic, three-dimensional representation,

- b) a scaled, coded three-dimensional representation,
- c) a realistic, two-dimensional perspective representation, and
- d) a scaled, coded, two-dimensional, perspective representation.

5 11. The process of claim 1, wherein the computer image exists only as a data set.

12. The process of claim 1, wherein the computer image is selected from the group consisting of static image, film and interactive real-time representation.

10 13. The process of claim 1, wherein the three-dimensional object is selected from the group consisting of motor vehicle bodies and body parts.